

## CLAIMS

1. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, a method for operating a subscriber unit, said method comprising:
- 5 transmitting data to a central access point during a directed grant slot allocated to said subscriber unit;
- monitoring MAP messages broadcast by said central access point to detect acknowledgment of receipt of said data;
- if no acknowledgment of receipt is indicated by said MAP messages,
- 10 retransmitting said data.
2. The method of claim 1 wherein non-receipt is indicated by said MAP messages if a MAP message is received with a timestamp later than said directed grant slot and no acknowledgment is received.
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3. The method of claim 1 further comprising:
- after transmitting said data to said central access point, storing said data in an ARQ buffer for possible retransmission.
- 20 4. The method of claim 3 wherein storing said data comprises storing said data only if communication of said data is delay tolerant.

5. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, a method for operating a central access point, said method comprising:

receiving data from a subscriber unit during a directed grant slot allocated to said

5 subscriber unit; and

broadcasting a MAP message including an acknowledgment of receipt of said data.

6. The method of claim 5 wherein said acknowledgment is included only if said data

10 is delay tolerant.

7. The method of claim 5 further comprising:

prior to said directed grant slot, broadcasting another MAP message allocating said directed grant slot to said subscriber unit.

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8. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, apparatus for operating a subscriber unit, said apparatus comprising:

a MAC layer processor that transmits data to a central access point during a directed grant slot allocated to said subscriber unit and monitors MAP messages

20 broadcast by said central access point to detect acknowledgment of receipt of said data; and

an ARQ buffer that stores said data after it is transmitted; and

wherein if no acknowledgment of receipt is indicated by said MAP messages, said MAC layer processor retrieves said data from said ARQ buffer and retransmits said data.

9. The apparatus of claim 8 wherein non-receipt is indicated by said MAP messages  
if a MAP message is received with a timestamp later than said directed grant slot and no  
5 acknowledgment is received.

10. The apparatus of claim 8 wherein said ARQ buffer stores said data only if  
communication of said data is delay tolerant.

10 11. In a point to multipoint network operating according to a DOCSIS-based MAC  
protocol, apparatus for operating a central access point, said apparatus comprising:  
a physical layer transceiver that exchanges information signals with a subscriber  
unit via a transmission medium; and  
a MAC layer processor that receives data during a directed grant slot allocated to  
15 said subscriber unit via said physical layer transceiver and that broadcasts a MAP  
message including an acknowledgment of receipt of said data.

12. The apparatus of claim 11 wherein said acknowledgment is included only if said  
data is delay tolerant.

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13. The apparatus of claim 11 wherein said MAC layer processor, prior to said  
directed grant slot, broadcasts another MAP message allocating said directed grant slot to  
said subscriber unit.

14. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, apparatus for operating a subscriber unit, said apparatus comprising:

means for transmitting data to a central access point during a directed grant slot  
5 allocated to said subscriber unit;

means for monitoring MAP messages broadcast by said central access point to detect acknowledgment of receipt of said data; and

means for, if no acknowledgment of receipt is indicated by said MAP messages, retransmitting said data.

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15. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, apparatus for operating a central access point, said apparatus comprising:

means for receiving data from a subscriber unit during a directed grant slot allocated to said subscriber unit; and

15 means for broadcasting a MAP message including an acknowledgment of receipt of said data.

16. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, a computer program product for operating a subscriber unit, said computer

20 program product comprising:

code that causes transmission of data to a central access point during a directed grant slot allocated to said subscriber unit;

code that causes monitoring of MAP messages broadcast by said central access point to detect acknowledgment of receipt of said data;

code that causes, if no acknowledgment of receipt is indicated by said MAP messages, retransmission of said data; and  
a computer-readable medium that stores the codes.

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17. The computer program product of claim 16 wherein non-receipt is indicated by said MAP messages if a MAP message is received with a timestamp later than said directed grant slot and no acknowledgment is received.

10 18. The computer program product of claim 16 further comprising:  
code that causes, after transmission of said data to said central access point, storing of said data in an ARQ buffer for possible retransmission.

15 19. The computer program product of claim 18 wherein said code that causes storing of said data causes storing of said data only if communication of said data is delay tolerant.

20 20. In a point to multipoint network operating according to a DOCSIS-based MAC protocol, a computer program product for operating a central access point, said computer program product comprising:

code that causes reception of data from a subscriber unit during a directed grant slot allocated to said subscriber unit;

code that causes broadcasting of a MAP message including an acknowledgment of receipt of said data; and

a computer-readable storage medium that stores the codes.

21. The computer program product of claim 20 wherein said acknowledgment is  
5 included only if said data is delay tolerant.

22. The computer program product of claim 20 further comprising:  
code that, prior to said directed grant slot, causes broadcasting of another MAP  
message allocating said directed grant slot to said subscriber unit.

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